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(SPICE)

GURINOVICH, G.P.

to

GURINOVICH, G.P.

(ALL CARDS OF SAME MAN)

GURINOVICH, G.P.; SARZHEVSKIY, A.M.

Photoelectric equipment for measurements of the polarization  
[with summary in English]. Inzh.-fiz.zhur. 1 no.8:59-64 Ag '58.  
(MIRA 11:8)

1. Institut fiziki i matematiki AN BSSR, Minsk.  
(Photoelectric measurements) (Polarization (Light)--Measurement)

24(7) .

SOV/48-22-11-30/33

AUTHORS: Gurinovich, G. P., Sevchenko, A. N.

TITLE: Dependence of the Degree of Polarization Upon the Wavelength of Fluorescence (Zavisimost' stepeni polyarizatsii ot dliny volny fluorestsentsii)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 11, pp 1407-1411 (USSR)

ABSTRACT: This is an experimental investigation of the polarization versus excitation- and luminescence wavelength function. The measurements were carried out with a device, the block scheme of which is portrayed in figure 1. In figure 2 curves describing the function in question are given for 3-mono-methyl-amino-phthalimide in glycerin, which exhibits a well-pronounced mirror symmetry. The absorption- and emission spectra were obtained by L. G. Pikulik. It turns out that the polarization evidently decreases at a further departure from the frequency of the pure electron transition the rule of mirror symmetry and of polarization still being satisfactorily satisfied. Similar measurements were carried out with fluorescein and thiocyanide 5 (extra)(Tables 1, 2).

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SOV/42-22-11-30/33

Dependence of the Degree of Polarization Upon the Wavelength of Fluorescence

The evidence presented in the tables offers a substantiation of theoretical considerations. As is known the theoretical value of polarization in isotropic solutions equals  $1/2$ . Experimental data for 3-mono-methyl-amino-phthalimide are given in table 3. It indicates that depolarizing factors can be found. If excitation is effected with light having the same frequency as that of the pure electron transition and the polarization is measured at the respective place, there are reasons to believe that even higher values of polarization may be obtained. This is, however, connected with certain experimental difficulties. The polarization versus the luminescence wavelength function was also investigated for dyes of a porphine type. The experiments showed a pronounced dependence, which is basically different from the analogous functions of other dyes. The experimental results presented are in good accordance to the measurements carried out with fluorescence spectra. The authors express their gratitude to T. N. Godnev for making available certain preparations. There are 5 figures, 3 tables, and 10 references, 7 of which are Soviet.

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S07/43-22-11-30/33

Dependence of the Degree of Polarization Upon the Wavelength of Fluorescence

ASSOCIATION: Institut fiziki i matematiki AN BSSR  
(Institute of Physics and Mathematics, AS Belorussian SSR)

Card 3/3



24(4)  
AUTHORS:

SOV/20-123-1-15/56  
Sevchenko, A. N., Academician,  
Academy of Sciences Belorussian SSR, Gurinovich, G. P.

TITLE:

The Polarization of Luminescence in the Case of Excitation by  
Polarized and Natural Light (Polyariza'siya lyuminesentsii  
pri vozbuzhdenii polarizovannym i yesestvennym svetom)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1, pp 60-63  
(USSR)

ABSTRACT:

The formula by V. L. Levshin and S. I. Vavilov:  $P_n = P_p / (2 - P_p)$   
applies only to isotropic media and to the case in which  
absorption and emission are dipole-like.  $P_n$  and  $P_p$  respectively  
denote the degree of polarization in the case of excitation by  
natural and polarized light respectively. The above formula was  
derived for observations at an angle of  $\pi/2$  to the direction of  
the exciting light. For observations carried out at an angle  
 $\chi \neq \pi/2$  it holds that

$$P_n = P_p (1 - \cos^2 \chi) / (2 - P_p \sin^2 \chi).$$

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However, all considerations in this paper concern the

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Excitation by Polarized and Natural Light

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special case  $\chi = \pi/2$ . This paper deals with isotropic solutions for cubic crystals. Calculations are carried out for electric (e) and magnetic (m) dipoles, electric quadrupoles (q), as well as for electric ( $\delta_e$ ) and magnetic ( $\delta_m$ ) circular oscillators. It is known that the dependence of the degree of polarization of isotropic solutions on the angle  $\eta$  between the electric vector of the exciting light and the axis Oz varies for different multipoles. If the degree of polarization remains below 50%, this dependence is described in the special case  $\chi = \pi/2$  by the formulae given in a table. The formulae for the various combinations of multipoles differ considerably from one another. In many cases these formulae are suited for the simple determination of the nature of the radiator by means of two measurements. The formula for the connection between the observed values of the degree of polarization of the excitation by natural and by polarized light are of special interest in the case of cubic crystals. For crystals, calculation is analogous to that for isotropic solutions. In this connection, calculations must be carried out for the following three special cases:

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Excitation by Polarized and Natural Light

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1) The oscillators (of absorption and emission) are orientated parallel to the axes of the fourth order. 2) The oscillators are orientated parallel to the axes of the third order. 3) The oscillators are orientated parallel to the axes of the second order. Sometimes it is necessary to excite polarized luminescence by natural light with a certain admixture of polarized light. A formula is derived for dipole-like emission and absorption for the case in which the degree of polarization of the exciting light is known. There are 2 figures, 4 tables, and 7 references, 6 of which are Soviet.

SUBMITTED: June 9, 1958

Card 3/3

Gurlov, V. G. P.

Stepanov, B. I., Academician AS  
Belorussian SSR

807/90-59-1-9/57

Investigations by Belorussian Scientists in the Field of  
Spectroscopy and Luminescence (Laboratory Belorussian SSR  
po spektroskopii i lyuminitsentstsi)

Vestnik Akademii nauk SSSR, 1959, No 1, pp 68-76 (USSR)

These investigations are being carried out at the Institute  
fiziki i matematiki (Institute of Physics and Mathematics)  
and the filialnyi fakul'tet Belorusskogo universiteta  
(Regional Branch of Belorussian University) under the direct-  
ion of B. I. Stepanov, A. M. Serzhenko, M. A. Tel'yanskaya,  
A. I. Kravtsov, E. P. Gurlov, and V. I. Fedorov, Corresponding Member,  
Academy of Sciences, SSSR. In the field of theoretical spectroscopy,  
the investigations by B. I. Stepanov, A. M. Serzhenko, and V. I. Fedorov  
are mentioned. Further, the following in-

vestigations are indicated:

B. I. Stepanov, A. M. Serzhenko, and E. P. Gurlov examined the general  
principles of spectroscopy of negative currents in their  
examinations.

On the basis of experimental data A. M. Serzhenko obtained  
important results in the determination of "mine values of  
optical characteristics of the substances examined.

A. I. Kravtsov, E. P. Gurlov, and V. I. Fedorov examined calculation methods of  
polarization with large overlapping of absorption and lumines-

cence spectra. The results of these investigations are presented in the  
examination of luminescence of phosphoric vapors. He also  
showed that the efficiency of quenching collisions may be much  
less than one.

E. P. Gurlov, under the direction of A. M. Serzhenko, examined  
the influence of the solvent on the field of fluorescence as  
well as the absorption and emission spectra of fluorophores. A

A. M. Serzhenko, E. P. Gurlov, and V. I. Fedorov examined the  
luminescence polarization of organic compounds, including the  
new time they obtained by means of improved apparatus.

A. M. Serzhenko, E. P. Gurlov, and V. I. Fedorov work in the field of lum-

inescence of organic compounds. The results of these investigations are presented in the  
examination of optical properties of chlorophyll and  
related compounds are being carried out in close cooperation  
with the Institute Biological Academy of Sciences (Institute of  
Academy of Sciences, Belorussian SSR).

A. M. Serzhenko, E. P. Gurlov, and V. I. Fedorov examined the  
absorption and luminescence spectra of a solution of A.

A. M. Serzhenko, E. P. Gurlov, and V. I. Fedorov examined the  
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Academy of Sciences, Belorussian SSR).

24(7), 24(6)  
APPENDIX

TEXT:

REMARKS:

APPENDIX:

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GURINOVICH, G.P.

Luminescence of dyes of the porphine series. Trudy Inst.fiz.1  
mat.AN BSSR no.3:111-130 '59. (MIRA 13:4)  
(Luminescence) (Porphine)

24.3600

66584

SOV/51-7-5-14/21

AUTHORS: Gurinovich, G.P., Sarzhevskiy, A.M. and Sevchenko, A.N.

TITLE: On the Maximum Polarization of Luminescence in Complex Molecules

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 5, pp 668-676 (USSR)

ABSTRACT: The theory of polarized fluorescence predicts a maximum value  $P_0 = 0.5$  for polarization in isotropic solutions. In order to measure the maximum value of polarization it is necessary to eliminate the effect of Brownian rotational motion of molecules. This may be achieved in two ways: either by allowance for rotation of the molecule during the excited-state lifetime or by fixing the molecule (by placing it in a solid). The authors used both these methods to study polarization in the following phthalimide derivatives: 3-monomethylaminophthalimide, 3-monomethylamino-N-methylphthalimide, 3-aminophthalimide, 3-amino-N-methylphthalimide, 3,6-diamino-N-methylphthalimide. When the first method was employed glycerine was used as a solvent and its viscosity was varied by altering temperature. In the second method polymethyl methacrylate (Perspex) was used as a solvent. Solid solutions were prepared by dissolving phthalimide derivatives in monomethyl methacrylate and polymerizing it in the presence of 1.2% of benzoyl peroxide at 50-70°C. Uniform transparent samples were cut up from Perspex prepared in this way; each sample contained  $5 \times 10^{-6}$  g of a

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On the Maximum Polarization of Luminescence in Complex Molecules

phthalimide derivative in 1 cm<sup>3</sup>. The absorption spectra were recorded by means of an SF-4 spectrophotometer and the fluorescence spectra were recorded using a high speed diffraction monochromator. Polarization was measured using a technique described earlier by Gurinovich and Sevchenko (Ref 10); the error in polarization measurements amounted to 3-5%. The measured degrees of polarization along the absorption and fluorescence spectra are shown in Figs 1-3. It was found that when the frequencies of excitation, of fluorescence and of a purely electronic transition were equal, the value of  $P_0$  in all compounds approached 0.5 (50%). In all cases the dependence  $P_0 = f(\nu_{fl})$  was a mirror image of the dependence  $P_0 = f(\nu_{exc})$ , with the frequency of the purely electronic transition as the centre of symmetry. It is shown that the variations in the reported values of  $P_0$  and departures of  $P_0$  from its theoretical limit are due to vibrations in the ground and excited states of molecules. There are 5 figures, 2 tables and 15 references, 10 of which are Soviet, 2 French, 2 German and 1 Polish.

SUBMITTED: March 21, 1959

Card 2/2

24 (7)

AUTHORS:

Sevchenko, A. N., Academician, AS BSSR, SOV/20-126-5-18/69  
Curinovich, G. P., Sarzhevskiy, A. M.

TITLE:

On the Limit Polarization of Fluorescence (O predel'noy polarizatsii fluorestsentsii)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 979 - 982 (USSR)

ABSTRACT:

The authors first discuss the fact that the limit values of the degree of fluorescence polarization  $P_0$  do not attain the theoretical value  $P_0=0.5$  if all known depolarizing factors are eliminated. Further, the authors deal with a number of articles published by other authors on this field. In order to obtain the limit values of the degree of fluorescence polarization, it is necessary to eliminate Brown's rotational motion; for this purpose, solid solutions of phthalimides in polymethyl methacrylate of the concentration  $5 \cdot 10^{-6} \text{ g/cm}^3$  are used. The frequency dependence of the degree of emission- and absorption spectrum polarization is shown by figures 1 and 2; table 1 contains corresponding results for various compounds. Measurement of the

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On the Limit Polarization of Fluorescence

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polarization degree of fluorescence with the frequency  $\nu_{em} = \nu_{el}$  and excitation in various ranges of the long-wave absorption bands yielded straight line 1, in the excitation by light with the frequency  $\nu_{exc} = \nu_{el}$ , straight line 2 resulted,  $P_o(\nu_{exc})$  (straight line 3) was obtained from the observation of the fluorescence with  $\nu_2 < \nu_{el}$ ,  $P_o(\nu_{em})$  (straight line 4) in the case of excitation with  $\nu_1 > \nu_{el}$ , and straight line 5 when  $\nu_3 < \nu_{el}$  (all data given in Fig 1). Figure 2 shows the frequency dependence of the degree of emission- and absorption spectrum polarization in the case of excitation in two absorption bands which have opposite signs of fluorescence polarization. The absolute values of the degree of polarization increase both for positive and negative signs with approaching frequency of the pure electron transitions. In most cases the curves  $P_o = f(\nu_{exc})$  and  $P_o = g(\nu_{em})$  are mirror-symmetric. The absolute values of  $P_o$  in the case of excitation by light of the frequency  $\nu_{exc} = \nu_{el}$  in solid solutions attain almost the theoretical limit when the fluores-

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On the Limit Polarization of Fluorescence

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cence of the same frequency is observed. The authors discuss in detail the fact that it attains a maximum value of 0.48 instead of 0.50 and consider possible reasons for this observation. A scheme illustrating the quantum transitions (Fig 3) is discussed as well in connection with the curves plotted in figures 1 and 2. The dependence of the polarization degree on the frequency of the exciting light within the long-wave band in the case of absorption and emission is explained by the different orientation of the dipole moments of the direct and reverse transitions (Scheme by Jablonski, Ref 7). There are 3 figures, 1 table, and 7 references, 5 of which are Soviet.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk BSSR (Institute of Physics and Mathematics of the Academy of Sciences, Belorussian SSR)

SUBMITTED: March 9, 1959

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24(7)

AUTHORS:

Sevchenko, A. N., Academician, AS BSSR, <sup>SOV/20-127-6-13/51</sup> Gurinovich, G. P.,  
Sarzhevskiy, A. M.

TITLE:

On the Polarization of the Fluorescence of Complicated  
Molecules With Spectra Which Cannot Be Classified by the  
Rule of Mirror Symmetry

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1191-1194  
(USSR)

ABSTRACT:

V. L. Levshin showed in a paper (Ref 1) that some complicated molecules have a mirror-symmetric spectrum, and the complicated molecules are accordingly classified in molecules of first and second type. Besides, B. S. Neporent suggested a scheme with four levels for the molecules of second type. In connection with the mirror-symmetric dependence of polarization on the frequency in the molecules of first type, it would be much interesting to study this dependence for molecules of the second type in order to determine electron transitions in this way. Solid solutions of compounds with molecules of the second type were investigated for the dependence of

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SOV/20-127-6-13/51

On the Polarization of the Fluorescence of Complicated Molecules With Spectra Which Cannot Be Classified by the Rule of Mirror Symmetry

polarization of the fluorescence on the frequency of the exciting light. The experimental methods have already been described in another paper (Ref 8), and the measurement results are shown in four diagrams (Fig 1). The spectra of the absorption, of the fluorescence, and the dependence of the degree of polarization on the observation conditions and the excitation frequency are represented graphically. It is ascertained that the spectra change considerably in the transition to the solid solution. This change consists in an increase in the half widths. To investigate this more closely, polarization measurements were carried out on glycerin solutions, which showed that there is no considerable change of the polarization characteristic in the transition to solutions, but the half widths of the fluorescence bands greatly depend on the half widths of the absorption bands. Besides, the dependence of polarization on individual

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On the Polarization of the Fluorescence of Complicated Molecules With  
Spectra Which Cannot Be Classified by the Rule of Mirror Symmetry

exciting frequencies was investigated. From the results obtained, conclusions are made concerning the inner molecule vibrations, and it is ascertained that between the directions of the dipole moments of the emission- and absorption transitions there is an angle depolarizing the fluorescence. The level scheme shown in figure 2 with the corresponding transitions is then discussed in detail, and finally it is ascertained that the scheme with four levels suggested by B. S. Neporent is not sufficient. The authors thank B. I. Stepanov for his interest in the work and the valuable discussions. There are 2 figures and 12 Soviet references.

ASSOCIATION: Institut fiziki Akademii nauk BSSR  
(Institute of Physics of the Academy of Sciences,  
Belorussian SSR)

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24(7)

SOV/20-128-3-21/58

AUTHORS: Sevchenko, A. N., Academician of the AS of the Belorussian SSR,  
~~Gurinovich, G. P.~~, Solov'yev, K. N.

TITLE: On the Symmetry of Porphyrin Molecules

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 510-513  
(USSR)

ABSTRACT: The problem of the symmetry of porphyrin molecules under various conditions has not yet been solved and was dealt with by several authors in a different manner. An experimental investigation of these symmetry properties would therefore be of some interest. The authors investigated the polarization of porphyrin fluorescence in acid and neutral medium as well as of metallic porphyrins. In the above solvents the absorption spectra of the substances under discussion exhibit a shape that is typical of porphyrins, and differ from spectra in other solvents only by a slight band shift. In all cases, these spectra appeared to possess two bands which are approximately symmetrical to the two absorption bands. Fluorescence was excited in the longwave absorption band, and the degree of polarization was measured in the shortwave emission band. For a determination of the limiting polarization, the authors in-

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On the Symmetry of Porphyrin Molecules

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investigated the dependence of the degree of polarization on the solution viscosity (varying within rather wide limits). The authors did not dispose of an unsubstituted porphin, whose molecule has the greatest symmetry. The molecule of tetraphenyl porphin under investigation exhibits the same symmetry properties as the porphine molecule, and the conclusions drawn on the symmetry of this molecule apply to porphin molecules as well. Tetraphenyl porphin unfortunately does not fluoresce in acid medium; this is why this compound and its cyclic complex can be investigated in neutral medium only. The degree of polarization of Zn tetraphenyl porphin (13%) does not exceed the theoretical value if the symmetry is beyond the third order (14.3%). In neutral medium, symmetry is not beyond the second order. With mesoporphyrin and protoporphyrin in acid medium, limiting polarization is very low, but somewhat higher than  $1/7$ . This is why the four central protons are found in the molecule plane. The conjugated system of bonds is illustrated in three diagrams. The limiting polarization of Zn-mesoporphin equally exceeds  $1/7$ . Also with Zn-mesoporphyrin, the deviations from the theoretical value are probably due to the effect of the lateral substituent. The authors thank M. G. Gurevich for valuable discussions and for providing the compounds under discussion. There are 5 figures, 1 table, and 14 references,

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On the Symmetry of Porphyrin Molecules

SOV/20-128-3-21/58

7 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk BSSR  
(Physics Institute of the Academy of Sciences of the Belorus-  
sian SSR)

SUBMITTED: June 24, 1959

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GURINOVICH, G. P., Cand Phys-Math Sci -- (diss) "Spectral-luminescent research into compounds of a porphyrite series." Minsk, 1960. 15 pp; (Ministry of Higher and Secondary Specialist and Professional Education Belorussian SSR, Belorussian State Univ im V. I. Lenin); 200 copies; price not given; list of author's works on pp 14-15 (15 entries); (KL, 25-60, 126)

S/020/60/133/003/026/031/XX  
B019/B067

AUTHORS: Sevchenko, A. N., Academician of the AS BSSR, Gurinovich, G. P.  
and Solov'yev, K. N.

TITLE: Some Characteristics of the Polarization of Fluorescence<sup>24</sup> of  
Porphyrines

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 3,  
pp. 564 - 567

TEXT: The authors attempted to study the relationship between the degree of polarization of emitted waves and their wavelength, and also the spatial orientation of the absorption oscillators. For this purpose they took the polarization spectra of two fluorescence bands of pheophytin (A) of dimethyl ether of protoporphyrine IX (B) and of  $\alpha$ -,  $\beta$ -,  $\gamma$ -, and  $\delta$ -tetraphenylporphyrines (C). The measurements were made with a device having two monochromators, castor oil and glycerin being used as solvents. The results of measurement for (B), dissolved in castor oil, and the results for (A) are graphically represented in Fig. 1 and Fig. 2, respectively. The results for (C) are analogous to those of (B). In these diagrams,

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Some Characteristics of the Polarization of  
Fluorescence of Porphyrines

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curve 1 represents the absorption spectrum, curve 2 the luminescence spectrum, curve 3 the degree of polarization as a function of wavelength, and curves 4 and 5 the polarization spectra of the first two luminescence bands. These results are discussed on the basis of the ordinary theory of polarized luminescence, and it is stated that the results may be satisfactorily explained only for highly hypothetical additional conditions. The authors mention another interpretation of the results for which they assume that the superposition of not perfectly symmetric oscillations causes a great change in the oscillator properties. It is usually assumed that in the electron spectra of polyatomic molecules mainly symmetric vibrations occur; in this case the oscillator maintains its direction. This assumption is related to the neglect of the dependence of the matrix elements of the dipole transition moment on the nuclear coordinates. The authors demonstrate that unsymmetrical vibrations may occur by taking account of this dependence. They thank M. G. Gurevich for having synthesized the compounds investigated, and M. A. Yel'yashevich and B. I. Stepanov, Academicians of the AS BSSR, for a discussion. There are 2 figures and 8 references: 5 Soviet, 2 US, and 1 German.

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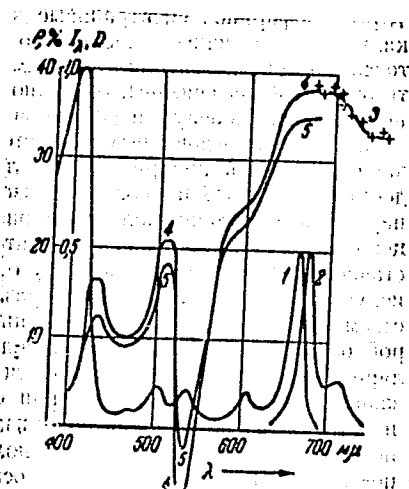


Рис. 1. Спектр поглощения (1), люминесценции (2) и зависимость степени поляризации от длины волны испускания (3), а также поляризационные спектры для первой (4) и второй (5) полос люминесценции протопорфирина в касторовом масле

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B019/B067

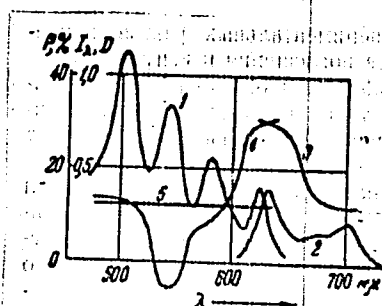


Рис. 2. То же, что на рис. 1, для феофитина а

Some Characteristics of the Polarization of  
Fluorescence of Porphyrines

S/020/60/133/003/026/031/XX  
B019/B067

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Institute of Physics of  
the Academy of Sciences BSSR)

SUBMITTED: April 19, 1960

Card 3/4

GURINOVICH, G.P.; SEVCHENKO, A.N.; SOLOV'YEV, K.N.

Maximum polarization of the fluorescence of porphyrins.  
Opt. i spektr. 10 no.6:750-758 Je '61. (MIRA 14:8)  
(Polarization (Light)) (Fluorescence)  
(Porphyrins--Spectra)

YEL'YASHEVICH, M.A.; GURINOVICH, G.P.; SOLOV'YEV, K.N.

Awarding of the S.I.Vavilov Gold Medal. Usp.fiz.nauk 75  
no.2:389-390 0 '61. (MIRA 14:10)  
(Medals)

GURINOVICH, G. P., [Hurynovich, H. P.]; PIKULIK, L. G. [Pikulik, L. H.];  
SOLOV'YEV, K. M. [Salauiou, K. M.]

Anton Mikifaravich Seuchanka; on his 50th birthday. Vestsi AN  
BSSR. Ser. fiz.-tekhn. nav. no.1:124-128 '63.  
(MIRA 16:4)

(Seuchanka, Anton Mikifaravich, 1903-)



GURINOVICH, G.P.; STRELKOVA, T.I.

Study of molecular association in porphyrins. Biofizika 8  
no.2:172-180 '63. (MIRA 17:10)

1. Institut fiziki AN / BSSR, Minsk.

L 10759-63 EWP(j)/EPF(s)/EWT(1)/  
EWT(m)/BDS--AFTTC/ASD--Pc-4/Pr-4--RM/WH  
ACCESSION NR: AP3002789

S/0051/63/014/006/0809/0812

AUTHOR: Gurinovich, G. P.; Sarzhevskiy, A. M.; Sevchenko, A. N.

TITLE: New data on the dependence of polarization rate on the wavelength of the fluorescence

SOURCE: Optika i spektroskopiya, v. 14, no. 6, 1963, 809-812

TOPIC TAGS: polarization, fluorescence, phthalimides

ABSTRACT: To prove a previous assertion of the authors that the polarization of complex molecules depends on the absorption and emission frequencies, polarization rate has been measured in several phthalimides as a function of excitation and luminescence wavelength. A careful analysis of the dependence of fluorescence spectra on excitation wavelength for 3-monomethylaminophthalimide in plexiglass showed that when the compound was excited with wavelengths of 436, 405, and 365 mμ the emission spectra nearly coincide. The change in polarization rate with respect to the emission spectrum amounts to 6.5% over

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ACCESSION NR: AP3002789

an interval of  $6000\text{ cm}^{-1}$ , a magnitude in good agreement with previous data. It was shown that when 3-monomethylamino-N-methylphthalimide in glycerin was excited with wavelengths of 436 and 405 m $\mu$  the spectra coincide; when the compound was excited with waves of 365 m $\mu$  there is a small discrepancy, which is due to the addition of "blue" luminescence of glycerin. In this case the change in polarization rate amounts to 7% over the same interval of  $6000\text{ cm}^{-1}$ . The change in polarization rate with respect to the fluorescence spectrum for 2-acetylanthracene in glycerin at 20C and in isobutyl alcohol at 120C was 8 and 13%, respectively, over the same interval. The results obtained are taken to prove the previous assertion. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 28Jun62

DATE ACQ: 15Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 005

OTHER: 003

*just 24*  
Card 2/2

EWJ(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW  
L 10773-63

ACCESSION NR: AP3002797

S/0051/63/014/006/0835/0838

AUTHOR: Gurinovich, G. P.; Zhevandrov, N. D.; Solov'yev, K. N.

TITLE: 11th Conference on Luminescence [Held at Minsk, 10--15 September 1962]

SOURCE: Optika i spektroskopiya, v. 14, no. 6, 1963, 835-838

TOPIC TAGS: molecular luminescence, stimulated emission, triplet state, laser

ABSTRACT: The XI soveshchaniye po lyuminestsentsii (11th Conference on Luminescence), was attended by more than 370 Soviet scientists. More than 180 papers were presented. The following list indicates the areas of principal emphasis among the papers presented and the personalities associated with each area. I. STIMULATED EMISSION: dependence of absorption, scattering, and photoluminescence on the parameters of incident nonmonochromatic radiation and on nonradiative transitions (P. A. Apanasevich); conditions for

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coherent spontaneous emission (P. A. Apanasevich and G. S. Kruglik); induced anisotropy of the absorption factor at high intensities (V. P. Gribkovskiy); transfer and Maxwell equations solved for the absence of external radiation (B. I. Stepanov); effect of noise on generation of a plane-parallel layer (B. I. Stepanov, A. M. Samson, and Yu. I. Chekalinskaya); autoluminescence of a stack of plane-parallel plates with positive and negative absorption factors (A. P. Khapalyuk); effect of active substances inside a cavity on the radiation generated (B. I. Stepanov, A. M. Samson, and V. P. Gribkovskiy); proof of feasibility of using molecular crystals for lasers (M. S. Soskin); ruby laser kinetics (M. D. Galanin); neodymium-doped glass laser kinetics (P. P. Feofilov). II. MOLECULAR LUMINESCENCE THEORY: similarity between the Shpol'skiy effect, electron-vibrational transfer in impurity centers of ionic crystals, and the Mossbauer effect (K. K. Rebane and V. V. Khizhnyakov); diffusion quenching of fluorescence by additives (B. Ya. Sveshnikov); generalized theory of luminescence quenching by additives (A. M. Samson); classical linear oscillator model and resonance transformation of light by molecules (P. P. Shorygin and L. L. Krushinskiy); thermodynamics of photoluminescence.

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(Yu. T. Mazurenko); energy migration in two-component mixtures (V. S. Rubanov). III. LUMINESCENCE OF MOLECULAR CRYSTALS: pronounced temperature dependence of band half-width in exciton luminescence (V. L. Broude, Ye. F. Sheka, and M. T. Shpak); experimental studies of absorption spectra with deuterium-substituted naphthalene (Ye. F. Sheka); direct transition from the exciton zone in the luminescence spectrum of benzene (M. T. Shpak and others); impurity line spectra as indicators of crystal phase transformations (V. N. Vatulov); polarization changes in the short-wave spectrum of stilbene (V. I. Gribkov, N. D. Znevandrov, and Ye. I. Chebotareva); qualitative applicability of the phenomenological theory of exciton diffusion motion to anthracene crystals with naphthacene impurities (V. L. Zima, V. M. Korsunskiy, and A. N. Faydysh); discovery of intermediate local states in doped molecular crystals (V. P. Kovalev, Yu. V. Naboykin, and others); and triplet state of molecular crystals (Naboykin and others). IV. QUASI-LINE SPECTRA: multiplet electron-vibrational spectra in frozen n-paraffin solutions at 77K to melting point (E. V. Shpol'skiy); dibenzylaminoethylene as a solvent in luminescence spectroscopy of perilene and "defectene"

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(M. M. Val'dman and G. D. Sheremet'yev); use of isoparaffin to produce sharp spectra of alpha- and beta-methylnaphthalenes (V. L. Levchin and Kh. I. Mamedov); fluorescence and absorption spectra of nonmetallic phthalocyanine in n-paraffins (R. I. Pershakov); fluorescence and absorption spectra of pyrene in n-paraffins (L. A. Klimovaya); and phosphorescence spectrum of phenanthrene in paraffins (P. A. Tsiplyakov). V. YIELD AND QUENCHING OF LUMINESCENCE IN SOLUTIONS: nonradiative luminescence deactivation as a function of spectral position (V. V. Zelinskiy); nonradiative deactivation of the triplet state of excited aromatic molecules in glasslike solutions (V. L. Yermolayev); absence of Stokes cutoff (G. P. Gurinovich, Ye. K. Kruglik, and A. N. Sevchenko); and new fluorometric device with modulating frequencies of 11.2 and 131 Mc (V. I. Shirokovoy).

ASSOCIATION: none

SUBMITTED: .00

DATE ACQ: 15Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 000

OTHER: 000

For Complete Set See: 11th Conference on Luminescence <sup>7</sup>/<sub>III</sub>

Set 1/2, Card 4/4

ENP(j)/EPF(c)/ENT(m)/BDS ASD Pc-4/Pr-4 RM/WW

L 10773-63

S/0051/63/014/006/0835/0836

ACCESSION NR: AP3002797

AUTHOR: Gurinovich, G. P.; Zhevandrov, N. D.; Solor'yev, K. N.

TITLE: 11th Conference on Luminescence [Held at Minsk, 10-15 September 1962]

SOURCE: Optika i spektroskopiya, v. 14, no. 6, 1963, 835-838

TOPIC TAGS: molecular luminescence, stimulated emission, triplet state, laser

ABSTRACT: VI. LUMINESCENCE OF ORGANIC VAPORS: excited states in the gas phase (N. A. Borisevich); vapors of molecules with a structured spectrum (V. V. Gruzinskiy); temperature dependence of spectra of complex molecules and the relationship between the absorption factor and the average effective excitation energy (V. A. Tol'kachev); effect of temperature on the quantum yield of the luminescence of organic vapors (V. P. Klochkov);

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L 10773-63

ACCESSION NR: AP3002797

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and gas-phase study of methyl and ethyl derivatives of phthalimide (V. T. Korotkevich). VII. EFFECT OF MOLECULAR ASSOCIATION, SOLVENT PROPERTIES, ETC. ON LUMINESCENCE: concentration quenching of luminescence of solutions and the role of molecular association (V. L. Levshin); role of energy migration to nonluminescent-associated molecules in concentration quenching (B. Ya. Sveshnikov); concentration effects due to molecular association and solvent action (V. L. Levshin and V. G. Bocharov); method of calculating relative number of associative aggregates (A. S. Selivanenko and M. V. Fok); development of association in the course of concentration quenching (V. L. Levshin and Ye. G. Baranova); features of dimer luminescence of acridine orange and rhodamine B (Yu. V. Morozov); quantitative interpretation of temperature dependence of luminescence (O. P. Kharitonovaya, I. V. Piterskaya, and N. G. Bakhshiyev); effect of temperature on spectral-luminescence characteristics of complex molecules (L. F. Gladchenko and L. G. Pikulik); and light-induced orientation of molecules (B. S. Neporent and O. V. Stolbovaya). VIII. TRIPLET STATES: EPR and luminescence study of triplet states of molecules (A. K. Piskunov,

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R. N. Nurmukhametov, and D. N. Shigorin); induction-resonance energy transfer from aromatic molecules in the triplet state (V. L. Yermolayev and Ye. B. Sveshnikova); new method of determining probability of transition of molecules from the fluorescent to the phosphorescent state (A. V. Aristov and B. Ya. Sveshnikov); application of pulse spectroscopy methods to porphyrins (G. P. Gurinovich and A. I. Patsko); absorption spectra of excited organophosphors (V. A. Pilipovich and N. I. Tursunov); and development of phosphorescence in narrow-spectrum regions (M. D. Khalupovskiy). IX. MOLECULAR LUMINESCENCE OF INORGANIC COMPOUNDS: concentration dependence of intensity of luminescence lines in the ruby (N. A. Tolstoy and A. P. Abramov); mercurylike centers in ionic crystals as an intermediate case between free ions and solutions of complex molecules (N. Ye. Lushchik and Ch. B. Lushchika); luminescence of sodium nitrate at low temperatures (A. F. Yatsenko and Yu. A. Kulyupin); optical and photochemical properties of  $PbI_2$  crystals (I. S. Gorban' and V. M. Kosarev); luminescence of crystals and solutions of Li, K, Ng, and Ba platinocyanides (A. M. Tkachuk); separate reports on spectral characteristics of aqueous solutions of colloidal salts of Set 2/2, Card 3/4

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As, Ga, Se, Pb, and Bi (M. U. Belyy, I. Ya. Kushnirenko, and E. A. Okhrimenko); temperature dependence of absorption and fluorescence spectra of uranyl compounds (A. N. Sevchenko, L. V. Volod'ko, and D. S. Umreyko); luminescence of Cr ions in glass, and effect of  $\text{Cr}^{5+}$  ions on the luminescence spectra of  $\text{Cr}^{3+}$  (G. O. Karapetyan, S. G. Lunter, and D. M. Yudin); luminescence of rare-earth ions in glass (G. O. Karapetyan); luminescence of solutions and crystals of rare-earth complexes (A. N. Sevchenko, V. V. Kuznetsovaya, and V. S. Khomenko); and luminescence of uranyl cations in a complex with phthalocyanine (G. N. Lyamin and G. I. Kobyshev). Reports also dealt with such areas as photosynthesizing pigments, protein systems, the application of spectral-luminescence methods to biological problems, and the relation between luminescence and molecular structure.

[For Complete Set See: 11th Conference on Luminescence <sup>7</sup>/<sub>III</sub>

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L 9857-63

EWT(1)/EWT(m)/BDS--AFFTC/ASD/ESD-3/AFWL---RM/MAY/IJP(C)

ACCESSION NR: AP3001346

S/0048/63/027/006/0720/0723

AUTHOR: Gurinovich, G. P.; Kruglik, Ye. K.; Sevchenko, A. N.

TITLE: Concerning the shape of luminescence<sup>2)</sup> spectra under anti-Stokes excitation  
[Report of the Eleventh Conference on Luminescence held in Minsk from 10 to 15  
September 1962]

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v. 27, no. 6, 1963, 720-723

TOPIC TAGS: Stokes and anti-Stokes excitation, luminescence of organic molecules,  
fluorescein, rhodamine B, tryptaflavine, eosin, esculin, phthalimides

ABSTRACT: Numerous investigations of the relation between absorption and  
luminescence spectra have shown that for Stokes excitation thermodynamic  
equilibrium is attained during the lifetime of the excited state. Yet the  
existence of the "Stokes cutoff" of the luminescence spectra with excitation in  
the anti-Stokes region implies an energy deficit that is not compensated during  
the excitation lifetime. There is no good theoretical explanation for the  
difference; moreover, most experimental data on the "Stokes cutoff" are rather

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L 9857-63

ACCESSION NR: AP3001346

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old and in need of verification with the aid of modern techniques. The present work was devoted to investigation of the dependence of the shape of luminescence spectra on the excitation wavelength in the Stokes and anti-Stokes region. The radiation was obtained from mercury and xenon discharge tubes and the desired wavelengths isolated by means of a DMR-1 double monochromator. Care was taken to minimize scattering and to take the remaining scattered radiation into account. For the measurements there were chosen substances and solvents with maximum overlapping of the luminescence and absorption spectra. The luminescent substances studied were fluorescein, rhodamine B, trypanflavine, eosin, esculin and a series of phthalimide derivatives. The solvents were ethyl alcohol, water, glycerol, benzene, anisole and dioxane. In the case of fluorescein it was found that although the exciting lines extend far into the region of fluorescence, there is no noticeable shortening of the short wavelength part of the fluorescence spectrum. The spectral intensity distribution in the fluorescence spectra of eosin and esculin in alcohol (and esculin in water) shows no excitation wavelength dependence. The picture for the phthalimides is more complicated and somewhat difficult to interpret. Definitive conclusions must await further studies. Orig. art. has: 3 figures.

ASSOCIATION: none

Card 2/3

L 9857-63

ACCESSION NR: AP3001346

SUBMITTED: 00

DATE ACQ: 01 Jul 63

ENCL: 00

SUB CODE: PH

NR REF SOV: 008

OTHER: 004 FR AID: 23 Aug 63

ja/nh

Card 3/3

GURINOVICH, G.P.; PATSKO, A.I.

Some results of using pulse spectroscopic methods in the study of  
porphyrins. Izv. AN SSSR. Ser. fiz. 27 no.6:772-776 Je '63.

(MIRA 16:7)

(Porphyrins--Spectra)

GURINOVICH, G.P.; PATEYEVA, M.V.; SHUL'GA, A.M.

Study of the luminescence spectra of photochemical transformations  
of porphyrins. Izv. AN SSSR. Ser. fiz. 27 no.6:777-781 Je '63.  
(MIRA 16:7)

(Photochemistry) (Porphyrins--Spectra)



S/053/63/079/002/001/004  
B102/B186

AUTHORS: Gurinovich, G. P., Sevchenko, A. N., Solov'yev, K. N.

TITLE: Spectroscopy of porphyrins

PERIODICAL: Uspekhi fizicheskikh nauk, v. 79, no. 2, 1963, 173 - 234

TEXT: The present review article covers the published literature from 1933 to 1961. The chapters are as follows: (1) Introduction; (2) Chemical structure of the porphyrin molecules; (3) IR spectra of the porphyrins and problems of the molecule structure; (4) The electron spectra (absorption spectra, mirror symmetry of absorption and emission spectra, external effects on the spectra, effect of the pH of the solution, effect of the metal in the case of metal porphyrins, transitions with the participation of metastable states); (5) Quantum yield and luminescence period; (6) Polarized fluorescence of porphyrin derivatives (maximum polarization and the symmetry in the molecule structure, polarization spectra and the oscillator model of the porphyrin molecule); (7) Interpretation of the electron spectra (theory, experiments, interpretation of the vibrational spectra); (8) Spectroscopy of the associated forms of the porphyrin molecules; (9) Paramagnetic resonance. There are 27 figures and Card 1/2

Spectroscopy of porphyrins

S/053/63/079/002/001/004  
B102/B186

193 references.

Card 2/2

L 19952-63

EWA(k)/ENP(k)/ENP(q)/ENT(m)/BDS/T-2/EEC(b)-2/ES(t)-2--AFFTC/  
ASD/ESD-3/RADC/APGC/AFWL/IJP(C)/JW2--Pf-4/Pi-4/Pq-4--GG/WH/JHB/WG/K

ACCESSION NR: AP3006795

S/0053/63/080/004/0685/0701

SE  
47

AUTHOR: Gurinovich, G. P.; Zhevandrov, I. D.; Solov'yev, K. N.

TITLE: 11th Conference on Luminescence (Molecular luminescence  
and luminescence analysis) [Minsk, 10-15 Sep 1962]

SOURCE: Uspekhi fizicheskikh nauk, v. 80, no. 4, 1963, 685-701

TOPIC TAGS: laser research, laser resonant cavity, luminescence,  
inorganic laser material, luminescence conference, laser oscil-  
lation condition, molecular crystal laser, ruby laser, glass  
neodymium laser, Mossbauer effect, organic laser material, trip-  
let state, chlorophyll luminescence, albumen luminescence,  
luminescence research

ABSTRACT: The XI Soveshchaniye po lyuminesentsii (11th Con-  
ference on Luminescence) was held 10-15 September 1962 in Minsk.  
More than 370 participants took part, and more than 180 reports  
were presented. Considerable attention was paid to lasers. A  
series of theoretical works concerning the properties of absorp-  
tion and emission at high radiation intensities and the theory of

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ACCESSION NR: AP3006795

a resonator in which an active substance is placed were presented by the Institut fiziki AN BSSR (Institute of Physics, AN BSSR). P. A. Apanasevich in his report on the dependence of absorption, emission, and scattering of radiation on the intensity of incident radiation gave the derivation by the method of quantum electrodynamics of the dependence of absorption and dependence of scattering and photo-luminescence characteristics on the spectral composition and intensity of incident nonmonochromatic radiation absorbed by the medium and on the probability of nonoptical transitions. In the report of G. S. Kruplik and P. A. Apanasevich on the problem of coherent spontaneous emission, the conditions under which coherent spontaneous emission with an intensity proportional to the square of the number of emitted particles were discussed, and it was shown that under general conditions such emission is impossible. The report of V. P. Gribkovskiy on forced anisotropy of the absorption coefficient was devoted to properties of the absorption coefficient at high intensities, and it was shown that the absorption coefficients of a linearly polarized or a natural light coincide with absorption coefficients of isotropic radiation

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ACCESSION NR: AP3006795

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only at low or very high intensities. The report of B. I. Stepanov and coworkers on the oscillation of an inorganic plane-parallel layer dealt with the theory of laser resonators. Results of the solution of transport equations and Maxwell equations for inorganic layers with a negative absorption coefficient in the absence of outside radiation were given. The conditions for a stationary oscillation were obtained; by calculating the nonlinear dependence of the absorption coefficient on the radiation density, the values for density and energy release inside the layer under conditions of stationary oscillation were determined. The conditions for flows of different directions and frequencies were investigated. In the work of B. I. Stepanov, A. M. Samson, and Yu. I. Chekalinskaya on the effect of noises on the oscillation of a bounded plane-parallel layer, the light field inside and outside the resonator in the presence of noises was discussed. In the report of Khapalyuk on the possibility of generation of radiation by a system of plane-parallel plates, self-luminescence of a pile of plane-parallel plates with positive as well as negative absorption coefficients was analyzed. The report of B. I. Stepanov, A. M.

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Samson, and V. P. Gribkovskiy on the effect of characteristics of a substance on the properties of generated radiation was concerned with properties of an active substance inside the resonator. The pump power, absorption, luminescence, and the power and oscillation threshold of a plane-parallel layer with three energy levels were calculated. In the work of V. L. Broude, V. S. Mashkevich, A. F. Prihot'ko, N. F. Prokopyuk, and M. S. Soskin on induced radiation in molecular crystals, a four-level scheme for a quantum generator was discussed. It was shown that optical properties of molecular crystals provide a basis for the realization of a quantum generator. In the report of A. M. Samson and V. A. Savva on nonstationary luminescence of an oscillating plane-parallel layer, laser luminescence kinetics were discussed. In the report of M. D. Galinin, A. M. Leontovich, E. A. Sviridenkov, V. N. Smorchkov, and Z. A. Chizhikova on radiation properties of a ruby crystal laser, the kinetics of generation at room temperature and low temperature (down to -165C) and properties of radiation coherence in a ruby laser were investigated. The report of A. M. Bonch-Bruyevich, V. V. Vargin, Ya. A. Imas, G. O. Karapetyan, Ya. E. Karis, M. N.

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ACCESSION NR: AP3006795

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Tolstoy, and P. P. Feofilov on luminescence and induced radiation of a glass activated by neodymium discussed absorption and luminescence spectra of glass containing 0.1—10% neodymium. Stimulated emission in the region of 1.06  $\mu$ , observed in specimens, was investigated at room and nitrogen temperatures. K. K. Rebane and V. V. Khizhnyakov in their report presented results from theoretical investigations of the Mössbauer effect. The authors succeeded in discovering an analogy between Shpol'skiy's effect, electron-vibrational transitions in impurity centers of ionic crystals, and the Mössbauer effect. A new version of the theory of diffusion quenching of fluorescence in a solution by means of foreign substances was offered in the report of B. Ya. Sveshnikov (deceased), A. S. Selivanenko, V. I. Shirokov, and L. A. Kiyanskaya. Other reports presented during the conference on molecular luminescence can be grouped as follows: theory of molecular luminescence; luminescence of molecular crystals; quasi-line spectra of frozen solutions; yield and quenching of luminescence of solutions; luminescence of vapors of organic compounds; the influence of the association of molecules,

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L 19952-63

ACCESSION NR: AP3006795

the solvent, and other physicochemical factors on luminescence; triplet states; luminescence of chlorophyll, albumens, and other important biological compounds; molecular luminescence of inorganic compounds; and molecular luminescence and chemical problems (relationship between luminescence and molecular structure, chemiluminescence, etc.). Reports on luminescence analysis can be grouped as follows: luminescence analysis in chemistry; luminescence analysis in biology, medicine, microbiology, and veterinary medicine; luminescence analysis in technology, industry, and geology; and instruments and methods of luminescence analysis.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 30Sep63

ENCL: 00

SUB CODE: PH

NO REF SOV: 000

OTHER: 000

Card 6/6



GURINOVICH, G.P.; SHUL'GA, A.M.; SEVCHENKO, A.N., akademik

Polarized luminescence of the reduced forms of porphyrins.  
Dokl. AN SSSR 153 no.3:703-705 N '63. (MIRA 17:1)

1. AN SSSR (for Sevchenko).

STRAIKOVA, T.I.; GURINOVICH, G.I.; SAVCHENKO, A.N.

Effect of the acidity of the medium on the optical properties of  
porphyrins. Dokl. AN BSSR 7 no.11:736-739 N '63. (MIRA 17:9)

1. Institut fiziki AN BSSR.

ACCESSION NR: AP4040921

S/0250/64/008/005/0292/0295

AUTHOR: Gurinovich, G. P.; Gurinovich, I. F.; Shul'ga, A. M.

TITLE: Spectral luminescence study of the photochemical reaction products of porphyrins

SOURCE: AN BSR. Doklady\*, v. 8, no. 5, 1964, 292-295

TOPIC TAGS: spectral luminescence, photochemistry, porphyrin, absorption spectrum, polarized luminescence, infrared study

ABSTRACT: Because of the difficulties of studying reversible reactions in porphyrins in the presence of oxygen, the authors used indirect methods. They made measurements on frozen solutions of photoreduced porphyrins with ascorbic acid and found the degree of luminescence polarization to be about  $1/2$ , even in acid solutions when polarization of the initial porphyrins did not exceed  $1/7$ . This result contradicts the view that two central C = N double bonds are formed in the hydration of porphyrins by ascorbic acid. Polarization measurements thus eliminate a number of possible hypotheses concerning the structure of photoreduced porphyrins. Infrared studies indicate that basic changes in valence vibrations of H - H reduce to a few weak absorption bands. This may be interpreted in one of two ways:

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ACCESSION NR: AP4040921

1) a change in the linkage system of molecular bonds because of photoreduction may affect the spectral properties of the N—H group at the center of the linkage system; or 2) a change in the number of central N - H groups may lead to a considerable change in vibration. Conclusive evidence is not yet available to select the proper interpretation. The authors conclude from their studies that at least one stage in the photoreduction of porphyrins is associated with the hydration of pyrrole rings. But this hydration does not lead to the formation of compounds such as chlorine (the porphyrin), since the reaction has fast reversibility and the porphyrin chlorine is stable. Apparently, atoms of hydrogen are localized in different pyrrole rings, with corresponding redistribution of the double bonds. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics, AN BSSR)

SUBMITTED: 30Jul63

ATD PRESS: 3078

ENCL: 00

SUB CODE: OC, OP

NO REF SOV: 007

OTHER: OC2

Card 2/2

GURINOVICH, G.P.

Polarized luminescence of porphyrin. Acta physica Pol 26  
no.3/4:399-402 S-O '64.

1. Institut of Physics, Minsk, U.S.S.R.

L 01262-66 EWT(1)/EWT(m)/EPF(c)/EWP(j) IJP(c) RM

ACCESSION NR: AP5020804

UR/0048/65/029/008/1382/1384

AUTHOR: Gurinovich, G. P.; Patsko, A. I.

TITLE: On the triplet states of porphyrins /Report, 13th Conference on Luminescence held in Khar'kov 25 June to 1 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1382-1384

TOPIC TAGS: absorption spectrum, luminescence spectrum, phosphorescence, pulsed illumination

ABSTRACT: The authors have investigated the effect of powerful light flashes (2.5 to 50J) on the absorption and phosphorescence spectra of Zn-mesoporphyrin, Zn-tetraphenylporphyrin, Zn-tetraphenylchlorin, Cu-mesoporphyrin, and Cu-tetraphenylporphyrin at 77 and 300°C with an apparatus and technique that they have described elsewhere (Izv. AN SSSR. Ser. fiz., 27, 772, 1963). No effect of even the most powerful flashes on the absorption of the copper compounds was observed. In the zinc compounds, on the other hand, the light pulses gave rise to new absorption bands. The duration of phosphorescence and the time required to establish the flash-initiated absorption were investigated with a stroboscopic apparatus similar to that described by N.A.Tolstoy and A.M.Tkachuk (Optika i spektroskopiya,

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L 01262-66

ACCESSION NR: AP5020804

15, 698, 1963). The duration of phosphorescence was less than 0.1 millisecc and could not be measured with the technique employed. The flash-initiated absorption reached saturation several tens of milliseconds after the beginning of the flash. The significance of these results is discussed briefly and it is concluded that the flash-induced absorption is not due to triplet-triplet transitions, but to intermediate products of photochemical reactions. Orig. art. has: 2 figures and 1 table. 3

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: OP, GC

NO REF SOV: 008

OTHER: 001

Card

2/2

L 8268-66 EWT(1)/ IJP(c) WW/GG

ACCESSION NR: AP5019756

UR/0051/65/019/002/0239/0241

AUTHOR: <sup>44,55</sup> Gurinovich, G. P.; <sup>44,55</sup> Patsko, A. I.; <sup>44,55</sup> Solov'yev, K. N.; <sup>44,55</sup> Shkiran, S. F. 54  
535.51 : 535.373

TITLE: Polarization of the fluorescence of metalloporphyrins

SOURCE: Optika i spektroskopiya, v. 19, no. 2, 1965, 239-241

TOPIC TAGS: metal compound, fluorescence, light polarization, phosphorescence, intermolecular complex

ABSTRACT: The authors measured the limiting degree of polarization and the polarization spectra of zinc complexes of mesoporphyrin, octaethylporphine, tetraphenylporphine, tetrabenzoporphine, and copper complexes of mesoporphyrin and tetraphenylporphine. The zinc complexes exhibit both fluorescence and phosphorescence, the copper complexes only phosphorescence. The measurements were made with a double monochromator described previously (Izv. AN SSSR ser. fiz. v. 22, 1407, 1958) using rectangular vacuum cells immersed in liquid nitrogen in a quartz Dewar. The spectra are shown in Fig. 1 of the Enclosure. The results show that the degree of phosphorescence polarization is small and positive ( $\sim 1/7$ ) and does not depend on the excitation wavelength. The results are compared with other phosphorescence studies. The difference from the case of aromatic compounds is attributed to the

Card 1/3

0402 0189



L 8268-66

ACCESSION NR: AP5019756

increased interaction between the singlet and triplet levels, due to the heavy metal in the metalloporphyrin molecule. The results also point to an interaction between the triplet ( $\pi, \pi^*$ ) level with the singlet ( $\pi, \pi^*$ ) level, probably with the first excited level. This interaction may also be the cause of the difference in the spectra and luminescence durations of the metalloporphyrins and aromatic compounds. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 22Jul64

ENCL: 01

SUB CODE: OP

NR REF SOV: 006

OTHER: 004

Card 2/3

L 8268-66

ACCESSION NR: AP5019756

ENCLOSURE: 01

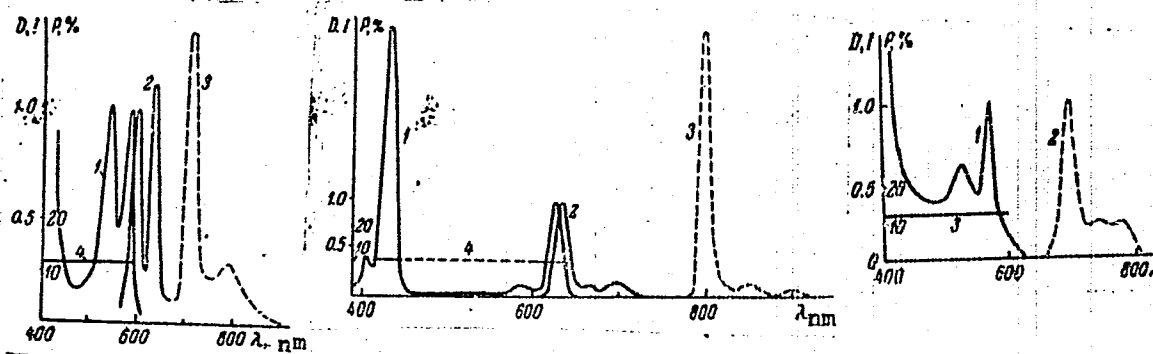


Fig. 1. Spectra of Zn mesoporphyrin (left), Zn tetrabenzoporphin (center), and Cu mesoporphyrin (right). 1 - Absorption spectrum, 2 - fluorescence spectrum, 3 - phosphorescence spectrum, 4 - polarization spectrum of phosphorescence.

Card 3/3

ACCESSION NR. AP4034036

S/0020/64/155/006/1345/1347

AUTHOR: Gurinovich, I. F.; Gurinovich, G. P.; Sevchenko, A. N.  
(Academician)

TITLE: The problem of the structure of the products of the photochemical reactions of porphyrins

SOURCE: AN SSSR. Doklady\*, v. 155, no. 6, 1964, 1345-1347

TOPIC TAGS: porphyrins, porphine, tetraazaporphine, porphyrasine, photochemical reaction, photoreduction, porphine photoreduction, photoreduced porphine structure, visible spectrum, IR spectrum, porphine infrared spectrum

ABSTRACT: The study was intended as a step in the continuous effort to clarify the structure of the photoreduction products of porphines and, more particularly, to determine the location of the two hydrogen atoms which are added as a result of the reduction. The experiments were carried out with tetraazaporphine (porphyrasine) in order to find out whether the aza atoms, which correspond to the methine bridges of the porphine molecule, are hydrogenated. If they are, an

Card 1/3

ACCESSION NR. AP4034036

intense NH-band would be expected to appear in the IR spectrum. The photoreduction of tetraazaporphine was completed in pyridine under vacuum, using  $H_2S$ , and in the presence of powdered KBr. Upon completion of the photoreduction, the solvent was vaporized in vacuum and the reduced product was ready for IR investigation in the pressed KBr tablet: this method prevented oxidation and contamination of the sample. The visible spectrum of the reduced product contained a strong new absorption maximum of 450  $\mu m$ . The maxima, characteristic for the initial product, were largely reduced. The action of air restored the initial spectrum. The changes in the IR spectrum gave reason to believe that no NH-groups were formed. Moreover, the initial NH-bands of the groups located in the center of the molecule disappeared because of the assumed shift in the conjugation system. The results indicate that, at least in the case of tetraazaporphine, hydrogenation does not take place at the bridge atoms. The most likely location of the hydrogenation is assumed to be in the pyrrole rings. Orig. art. has: 2 figures.

Card 2/3

ACCESSION NR. AP4034036

ASSOCIATION: Institut fizikii Adademii nauk BSSR (Institute of  
Physics, Academy of Sciences BSSR)

SUBMITTED: 25Jan64

DATE ACQ: 20May64

ENCL: 00

SUB CODE: CH

NO REF SOV: 008

OTHER: 002

Card 3/3

ACCESSION NR. AP4035816

S/0020/64/156/001/0125/0127

AUTHOR: Gurinovich, G. P.; Patsko, A. I.; Shul'ga, A. M.; Sevchenko, A. N. (Academician)

TITLE: Regeneration mechanism of photoreduced porphyrins

SOURCE: AN SSSR. Doklady\*, v. 156, no. 1, 1964, 125-127

TOPIC TAGS: photochemistry, photoreduction, porphyrins, chlorophyll, protoporphyrin, mesoporphyrin, tetraphenylporphine, tetraazaporphine, porphyrazine, triplet state

ABSTRACT: This study explains the mechanism of the regeneration of photoreduced porphyrins. Experiments were conducted with protoporphyrin, mesoporphyrin, tetraphenylporphine, and tetraazaporphine (porphyrazine) in 7:1 alcohol-pyridine solution; porphyrin concentrations were in the range of  $2-3 \cdot 10^{-2}$  mol/l; light was provided by a 500-watt motion-picture bulb. The kinetics of photoreduction and photoregeneration were traced by the change in the intensity of characteristic absorption bands. White light and light filtered

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ACCESSION NR. AP4035816

through KS-18 (red) or SS-8 (blue) filters in correspondence with the two main absorption peaks (745 m and 445 m for mesoporphyrin) were used. The results may indicate that the reactions studied take place on the triplet levels of both the initial and the photoreduced porphyrin. The triplet-triplet absorption spectra of the substance studied were actually obtained. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki, Akademii nauk BSSR (Institute of Physics, Academy of Sciences BSSR)

SUBMITTED: 02Jan64

DATE ACQ: 26May64

ENCL: 00

SUB CCDE: CH

NO REF SOV: 007

OTHER: 002

Card 2/2

APANASEVICH, P.A.; BORISEVICH, N.A. VOI OD'KO, L.V.; GLADCHENKO, L.F.;  
GRIBKOVSKIY, V.P.; GURINOVICH, G.P.; IVANOV, A.P.; KUZNETSOVA,  
V.V.; PIKULIK, L.G.; PILIPOVICH, V.A.; RUBANOV, A.S.; RUBANOV,  
V.S.; SAMSON, A.M.; SARZHEVSKIY, A.M.; SOLOV'YEV, K.N.;  
UMREYKO, D.S.; KHAPALYUK, A.P.; YEL'YASHEVICH, M.A., akademik,  
red.

[Interaction between nonequilibrium radiation and matter]  
Vzaimodeistvie neravnovesnogo izlucheniia s veshchestvom.  
Minsk, Nauka i tekhnika, 1965. 223 p. (MIRA 18:3)

1. Akademiya nauk SSSR. Institut fiziki. Akademiya nauk Belorusskoy SSR (for Yel'yashevich).



GURINOVICH, I.F.; GURINOVICH, G.P.; SEVCHENKO, A.N., akademik; TAUGER, S.M.

Structure of products of the photooxidation reaction of  
porphyrins. Dokl. AN SSSR 164 no.1:201-204 S '65. (MIRA 18:9)

1. Institut fiziki AN BSSR. 2. AN BSSR (for Sevchenko).

GURINOVICH, G.P.; SINYAKOV, G.H.

Polarized luminescence of the products of photochemical porphyrin reactions. Biofizika 10 no.6:946-952 '65. (MDRA 1981)

1. Institut fiziki AN Belorusskoy SSR, Minsk. Submitted June 2, 1965.

BYTEVA, I.M.; LOSEV, A.P.; GURINOVICH, G.P.

Interrelationships of chlorophylls a and b and their derivatives with hydrazine and phelylhydrazine. Biofizika 10 no.6:953-960 '65.  
(MIRA 19:1)

1. Institut fiziki AN Belorusskoy SSR, Minsk. Submitted April 12, 1965.

L-21996-66

ACC NR: AP6006968

SOURCECODE: UR/0368/66/004/002/0176/0178

AUTHOR: Gurinovich, G. P.

ORG: none

TITLE: The utilization of the SF-10 spectrophotometer for the recording of fluorescence  
excitation spectra 28 10

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 2, 1966, 176-178

TOPIC TAGS: spectrophotometer, excitation spectrum, luminescence spectrum, optic  
measurement, measuring apparatus

ABSTRACT: The author presents a discussion showing that a standard SF-10 spectropho-  
tometer can be used as a self-recording device for obtaining excitation spectra. It is also  
shown that, with the proper selection of the scale of recording an excitation spectrum and  
the optical density, the excitation spectrum and the absorption spectrum should coincide on  
a graph for pure substances. All the variations necessary for the utilization of a spectro-  
photometer for the recording of excitation spectra are given in a diagram (Fig. 1). It is  
demonstrated that very simple modifications of the recording part of a standard SF-10  
spectrophotometer make it possible to utilize the SF-10 for recording excitation spectra;

Card 1/3

UDC 532.242.2

L 21996-66

ACC NR: AP6006968

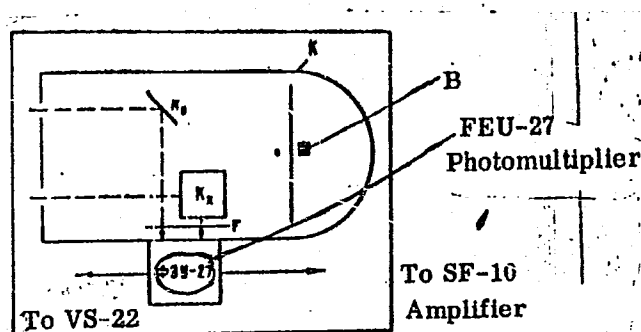


Fig. 1. Diagram of a cell compartment of the SF-10 spectrophotometer adapted for recording excitation spectra:

$K_0$  - luminescent screen with an infinite optical density ( $D \rightarrow \infty$ );  
 $K_x$  - cell with the material under study ( $D < 0.1$ );  $B$  - blind preventing light from entering the sphere;  $F$  - light filter separating the required segment of the luminescence spectrum;  $K$  - lid of the cell compartment of the SF-10.

moreover, the capacity for recording absorption spectra is retained. The principles, applications, and possible future uses of spectrophotometers are discussed. Author expresses his sincere gratitude to Z. A. Morgenshtern for making available the

Card 2/3.

L 21996-66

ACC NR: AP6006968

4  
"Lyumogen Red 640" and consultations on the spectral luminescent properties of this luminophor. In conclusion the author wishes to thank Yu. V. Glazkov, A. P. Losev, V. I. Dzhagarov, and V. V. Chernikov for useful discussions and assistance in constructing the proposed device. Orig. art. has: 2 figures and 3 formulas.

SUB CODE: 14, 20 / SUBM DATE: 04Aug65

Card 3/3

BK

L 26051-66 EWT(1)/EWT(2)/TAP(1) RM

ACC NR: AP6013896

SOURCE CODE: UR/0020/66/167/006/1269/1272

AUTHOR: Gurinovich, G. P.; Kruglik, Ye. K.; Sevchenko, A. N. (Academician AN BSSR) <sup>47</sup><sub>46</sub>

ORG: Belorussian State University im. V. I. Lenin (Belorusskiy gosudarstvennyy universitet) <sup>B</sup>

TITLE: Quantum fluorescence yield of solutions of polyatomic molecules during low-wave excitation

SOURCE: AN SSSR. Doklady, v. 167, no. 6, 1966, 1269-1272

TOPIC TAGS: quantum yield, fluorescence, spectral absorptivity, *molecule, photocell* / STsV-4 *photocell* <sup>2</sup>

ABSTRACT: This paper is a report on experimental studies to determine the reasons for the reduction in quantum radiation yield of polyatomic solutions in the anti-Stokes region. Special measures were taken to assure that the specimens were pure, as well as to eliminate association, ionization, etc., i. e. attention was given to all causes known to result in several types of absorption centers in the solution. These measures resulted in several cases of quantum fluorescence yield which were independent of the excitation wavelength. The specimens were illuminated by light from a mercury (SVDSH-500) or xenon (DKSSH-1000) tube passed through a quartz monochromator. The luminescence was recorded by an STsV-4 photocell. Curves are given showing the absorption, excitation and luminescence spectra and quantum yield for solutions of

Card 1/2

UDC: 535.371 <sub>2</sub>

L 26051-66

ACC NR: AP6013896

3,6-tetramethyldiamino-N-methylphthalimide in benzene, rhodamine 6g in ethanol, and eosin in ethanal. It is shown that the quantum fluorescence yield is constant for all solutions and that deviations indicate absorption centers of various types. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 14Dec65/ ORIG REF: 011/ OTH REF: 002

Card 2/2 *pla*



"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000617510001-0

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000617510001-0"

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000617510001-0



APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000617510001-0"

**"APPROVED FOR RELEASE: 08/10/2001**

**CIA-RDP86-00513R000617510001-0**



**APPROVED FOR RELEASE: 08/10/2001**

**CIA-RDP86-00513R000617510001-0"**

L 32043 56 LIT(EN)EN(1) AM  
ACC NR: ATCOL199

SOURCE CODE: UR/0308/66/00+/005/0-29/0+33

AUTHOR: Strelkova, T. I.; Gurinovich, G. P.; Sinvakov, G. N.

ORG: none

TITLE: Spectral-luminescence investigation of the ionization of phthalocyanines 51  
B

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 5, 1966, 429-433

TOPIC TAGS: phthalocyanine, luminescence spectrum, light polarization, proton interaction, electron transition, ionization phenomenon

ABSTRACT: In view of the discrepancies between the results of numerous experimental investigations of the spectral and luminescence properties of phthalocyanines, the authors have used a structural approach and polarization-luminescence methods to obtain new data on the protonization of phthalocyanines in acid solutions. The luminescence spectra of solutions of phthalocyanine and of phthalocyanine Mg were plotted with apparatus consisting of a diffraction monochromator and an automatic recorder. The polarization measurements were made with solutions cooled to liquid-nitrogen temperature using a modification of the same apparatus (described by one of the authors in Izv. AN SSSR ser. fiz. v. 22, 1407, 1958). The measurements were made at 700, 740, 770, and 870 nm, in neutral, acidified, and acid solutions in dimethyl phthalate, and in 98% sulfuric acid (the phthalocyanine Mg was dissolved in dimethyl phthalate). The high values obtained for the luminescence polarization and the characteristic structure of the spectrum offered unique evidence of low symmetry of structure of the ionic

Card 1/2

UDC: 535.37

L 3262011

ACC NR: AF001994

forms of the phthalocyanines, and that in this case the electron transitions must be simulated by fully anisotropic absorption and emission oscillators. It is concluded on the basis of the data that all the ionic forms of the phthalocyanine in an acid medium are not symmetrical. The protonization of all the nitrogen atoms of the phthalocyanine is incomplete even in the strong  $H_2SO_4$  solution. The extra protons are probably joined successively to the bridge nitrogen atoms with increasing acidity. Orig. art. has: 3 figures.

SUB CODE: 26/ SUBM DATE: 17Aug65/ ORIG REF: 021/ OTH REF: 001

Card

2/2

*So*

GURINOVICH, I. F.

24(7), 24(0)

AUTHOR:

TITLE:

PERIODICAL:

ABSTRACT:

Stepanov, B. I., Academician AS  
Belorusskaya SSR  
Investigations by Belorussian Scientists in the Field of  
Spectroscopy and Luminescence (Laboratory Belorusskikh uchenykh  
po spektroskopii i lyuminetsentsii)  
Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 68-76 (USSR)  
These investigations are being carried out at the Institute  
fiziki i matematiki (Institute of Physics and Mathematics)  
and the fizicheskii fakul'tet Belorusskogo universiteta  
(Physics Department of Belorussian University) under the direction  
of B. I. Stepanov, A. E. Serchenko, M. A. Tel'yachevich,  
and others. AS SSSR, and P. I. Fedorov, Corresponding Member,  
Academy of Sciences, SSSR. In the field of theoretical spectroscopy,  
the investigations by B. I. Stepanov, A. E. Serchenko, M. A. Tel'yachevich,  
and others are mentioned. Further, the following investigations are indicated:

A. P. Pribyvalko, B. I. Stepanov developed a theory of  
dispersion light filters.  
M. A. Borisov, A. E. Serchenko, A. J. Ivashchenko, A. P. Lepshinskii  
examined, by experiment, dispersion light filters for the  
infrared range.  
A. P. Pribyvalko analyzed the accuracy and the field of  
application of existing determination methods of optical  
constants of dispersed and not dispersed media.  
I. G. Mekrasnykh, A. A. Labuda, Ye. G. Vavtsov, obtained  
important results concerning the kinetics of one-electron  
spontaneous discharge (spectral intensity and discharge temperature).  
A. A. Labuda, I. G. Mekrasnykh, Ye. G. Vavtsov examined the mutual influence  
of the medium in spectrum analysis, and explained the method  
for their elimination.  
G. V. Orashkin obtained a series of methods to eliminate  
the influence of the medium.  
G. V. Orashkin, M. P. Krut'ko, succeeded in working out a  
control method of heavy penicillin in ordinary penicillin.  
M. A. Borisov, A. E. Serchenko, A. J. Ivashchenko, A. P. Lepshinskii  
examined the infrared spectra of various products.  
M. A. Borisov, A. E. Serchenko, A. J. Ivashchenko, A. P. Lepshinskii  
examined a series of structural peculiarities of alcohol oxides.  
M. A. Borisov, A. E. Serchenko, A. J. Ivashchenko, A. P. Lepshinskii  
examined the method for the determination of the germinating power of the seeds of some kinds  
of trees.  
A. E. Serchenko, A. M. Prigodnykh obtained good results by the use of luminescence  
analysis in dermatology.  
M. A. Borisov, A. E. Serchenko, A. J. Ivashchenko, A. P. Lepshinskii  
examined the absorption spectra of the  
aluminum-phenylpyridine complexes.  
D. A. Kozlov examined the physical methods for analyzing aluminum  
functions in the blood.  
M. M. Pavlyuchenko, G. A. Lysenko, carried out an extensive  
spectrophotometric examination of the formation of melanin  
and complex compounds in solutions.  
B. A. Serchenko spectroscopically examined the structure of  
various silicas.  
B. I. Stepanov, A. M. Prigodnykh carried out theoretical investigations  
of the vibrational spectra of various silicate crystals.

Card 5/8

Card 6/8

GURINOVICH, I.F.; PANS. VICH-KOLYADA, V.I.

Nature of the hydrogen bond of  $\alpha\beta$ -alcohol oxides and some  
unsaturated tertiary alcohols. Zhur.fiz.khim. 35 no.12:2754-  
2758 D '61. (MIRA 14:12)

1. Akademiya nauk BSSR, Institut fiziki.  
(Hydrogen bonding) (Alcohols)

9.5320  
24.3200

44939

S/O48/63/027/001/012/043  
B163/B180

AUTHORS: Gurinovich, I. F., and Horisevich, N. A.

TITLE: Infrared dispersion filters

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27,  
no. 1, 1963, 26 - 29

TEXT: The transmissivity of a number of dry powders to infrared radiation was measured in a UR - 10 infrared spectrometer as a function of the wave number between 1 and 15 microns. There is a transmission maximum for the wavelength at which the refractive index of the powder particles is equal to that of the surrounding air (Christiansen effect). The results are shown in the table. In the maximum and half-widths of the pass band the transmissivity of this kind of Christiansen filter increases as the particle size and layer thickness decreases. As particle size increases the position of the pass band maximum shifts to slightly longer wavelengths. Between 20 and 70°C the position of the maximum is unchanged but the transmissivity decreases slightly. This paper was presented at the 14th Conference on Spectroscopy in Gor'kiy, July 5-12, 1961. There are 3 figures.  
Card 1/2



Infrared dispersion filters

S/048/63/027/001/012/043  
B163/B180

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Institute of Physics of the Academy of Sciences BSSR)

Legend of Table: (1) Dispersive medium, (2) Half widths of pass band, (3) Transmissivity in the maximum, (4) Particle size, (5) Thickness of layer, (6) Air.

Диспергирующая среда (1)	$\lambda_0, \mu$	$\nu, \text{cm}^{-1}$	Полуширина полосы про- пускания, $\text{cm}^{-1}$ (2)	Пропуска- ние в макс. %, (3)	Размер частиц, мм (4)	Толщина слоя, мм (5)
$\text{NaNO}_3$ — воздух	6,5	1540	—	18	—	—
$\text{Ba}(\text{NO}_3)_2$ — " (6)	6,65	1500	100	33	0,03	0,03
$\text{SiO}_2$ — " "	7,2	1385	150	40	0,05	0,1
$\text{PbSO}_4$ — " "	7,6	1320	—	22	—	—
$\text{SrSO}_4$ — " "	7,7	1300	85	40	0,02	0,02
$\text{MnSO}_4$ — " "	7,72	1295	180	38	0,03	0,03
$\text{CaSO}_4$ — " "	7,8	1280	—	22	—	—
$\text{Na}_2\text{SO}_4$ — " "	7,75	1290	120	58	0,03	0,03
$\text{CuSO}_4$ — " "	8,2	1220	—	13	—	—
$\text{LiF}$ — " "	10,85	920	200	68	0,05—0,063	0,1

Card 2/2

ACCESSION NR: AP4040921

S/0250/64/008/005/0292/0295

AUTHOR: Gurinovich, G. P.; Gurinovich, I. F.; Shul'ga, A. M.

TITLE: Spectral luminescence study of the photochemical reaction products of porphyrins

SOURCE: AN BSSR. Doklady\*, v. 8, no. 5, 1964, 292-295

TOPIC TAGS: spectral luminescence, photochemistry, porphyrin, absorption spectrum, polarized luminescence, infrared study

ABSTRACT: Because of the difficulties of studying reversible reactions in porphyrins in the presence of oxygen, the authors used indirect methods. They made measurements on frozen solutions of photoreduced porphyrins with ascorbic acid and found the degree of luminescence polarization to be about  $1/2$ , even in acid solutions when polarization of the initial porphyrins did not exceed  $1/7$ . This result contradicts the view that two central C = N double bonds are formed in the hydration of porphyrins by ascorbic acid. Polarization measurements thus eliminate a number of possible hypotheses concerning the structure of photoreduced porphyrins. Infrared studies indicate that basic changes in valence vibrations of N-H reduce to a few weak absorption bands. This may be interpreted in one of two ways:

Card 1/2

ACCESSION NR: AP4040921

1) a change in the linkage system of molecular bonds because of photoreduction may affect the spectral properties of the N—H group at the center of the linkage system; or 2) a change in the number of central N - H groups may lead to a considerable change in vibration. Conclusive evidence is not yet available to select the proper interpretation. The authors conclude from their studies that at least one stage in the photoreduction of porphyrins is associated with the hydration of pyrrole rings. But this hydration does not lead to the formation of compounds such as chlorine (the porphyrin), since the reaction has fast reversibility and the porphyrin chlorine is stable. Apparently, atoms of hydrogen are localized in different pyrrole rings, with corresponding redistribution of the double bonds. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics, AN BSSR)

SUBMITTED: 30Jul63

ATD PRESS: 3078

ENCL: 00

SUB CODE: OC, OP

NO REF SOV: 007

OTHER: 002

Card 2/2

ACCESSION NR. AP4034036

S/0020/64/155/006/1345/1347

AUTHOR: Gurinovich, I. F.; Gurinovich, G. P.; Savchenko, A. N.  
(Academician)

TITLE: The problem of the structure of the products of the photochemical reactions of porphyrins

SOURCE: AN SSSR. Doklady\*, v. 155, no. 6, 1964, 1345-1347

TOPIC TAGS: porphyrins, porphine, tetraazaporphine, porphyrazine, photochemical reaction, photoreduction, porphine photoreduction, photoreduced porphine structure, visible spectrum, IR spectrum, porphine infrared spectrum

ABSTRACT: The study was intended as a step in the continuous effort to clarify the structure of the photoreduction products of porphines and, more particularly, to determine the location of the two hydrogen atoms which are added as a result of the reduction. The experiments were carried out with tetraazaporphine (porphyrazine) in order to find out whether the aza atoms, which correspond to the methine bridges of the porphine molecule, are hydrogenated. If they are, an

Cord 1/3

ACCESSION NR. AP4034036

intense NH-band would be expected to appear in the IR spectrum. The photoreduction of tetraazaporphine was completed in pyridine under vacuum, using  $H_2S$ , and in the presence of powdered KBr. Upon completion of the photoreduction, the solvent was vaporized in vacuum and the reduced product was ready for IR investigation in the pressed KBr tablet: this method prevented oxidation and contamination of the sample. The visible spectrum of the reduced product contained a strong new absorption maximum of 450  $\mu m$ . The maxima, characteristic for the initial product, were largely reduced. The action of air restored the initial spectrum. The changes in the IR spectrum gave reason to believe that no NH-groups were formed. Moreover, the initial NH-bands of the groups located in the center of the molecule disappeared because of the assumed shift in the conjugation system. The results indicate that, at least in the case of tetraazaporphine, hydrogenation does not take place at the bridge atoms. The most likely location of the hydrogenation is assumed to be in the pyrrole rings. Orig. art. has: 2 figures.

Card 2/3

ACCESSION NR. AP4034036

ASSOCIATION: Institut fizikii Adademii nauk BSSR (Institute of  
Physics, Academy of Sciences BSSR)

SUBMITTED: 25Jan64

DATE ACQ: 20May64

ENCL: 00

SUB CODE: CH

NO REF SOV: 008

OTHER: 002

Card 3/3

GURINOVICH, I.F.; GURINOVICH, G.P.; SEVCHENKO, A.N., akademik; TAUGER, S.M.

Structure of products of the photocoxidation reaction of  
porphyrins. Dokl. AN SSSR 164 no.1:201-204 S '65.

(MIRA 18:9)

1. Institut fiziki AN BSSR. 2. AN BSSR (for Sevchenko).

GURINOVICH, L.A. [Hurnovich, L.A.]

Functional limits of delayed conditioned reflexes in yearling dogs.  
Vestsi AN BSSR. Ser. biial. nav. no. 4:75-79 '60. (MIRA 14:1)  
(Conditioned response)



GURINOVICH, L.A. [Hurynovich, L.A.]

Characteristics of the formation of acomplex systems of temporary connctions in people at the age of 50 to 80. Vestsi AN BSSR Ser. biial. nav. no.1:59-63'63. (MIRA 16:9)  
(CONDITIONED RESPONSE) (AGING)

GURINOVICH, L.A. [Barynovich, L.A.]

Functioning of analyzers in the formation of complex systems  
of temporary connections in elderly people. Vestn. AN SSSR,  
Ser. biol. nav. no.3:93-97 '63 (MIRA 17:7)

GURINSICH, M.A.

*Chem* 1433. Detection of cadmium in the presence of copper. A. D. Despillier, M. A. Gushovitch and Yu. N. Anisimova (Vinnitski Med. Inst.). Zh. Anal. Khim., 1950, 11 (4), 505-507. --Metallic Zn precipitates both Cd and Cu from H<sub>2</sub>SO<sub>4</sub> soln. and hence it cannot be used for their separation. The use of Al is satisfactory. G. S. Sarny

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GURMOVICH, M.A.

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1. Detection of cadmium in the presence of copper. M. A. Gurmovich, M. A. Chernovikh, and Yu. N. Kuznetsov.

2. The effect of the concentration of the reagent on the detection of cadmium in the presence of copper. M. A. Gurmovich, M. A. Chernovikh, and Yu. N. Kuznetsov.

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